

## REMARKS/ARGUMENTS

In response to the Office Action dated 25 March 2003, Applicants respectfully request reconsideration of the application in view of the following remarks.

Claims 2-7 and 9-15 remain pending in the application.

### Response to Rejections Under 35 U.S.C. § 102

The Examiner has rejected claims 6, 9-12, 14 and 15 under 35 U.S.C § 102(b) as being anticipated by U.S. Patent No. 5,148,125 to Woodhead et al. Applicants respectfully traverse the Examiner's rejections.

An anticipation rejection is proper only if a single prior art reference discloses each and every element recited in a particular claim. Claims 6, 9-12, 14 and 15 all include a **phase detector** element for determining the value of a dielectric constant within a bulk material. "A phase detector 54 is coupled to the oscillator 52 and the transmission line 46 to detect the **difference in phase** between the reference square wave voltage signal and the signal provided to the transmission line." Specification page 4, last paragraph. The device disclosed in Woodhead also measures the dielectric constant within a bulk material but does NOT include a phase detector. Rather, the Woodhead device measures the dielectric constant of a material by analyzing the **frequency** of a signal that is transmitted through transmission line. "The output means transmits a **measure of the frequency** for monitoring of the dielectric constant of the material in which the line is embedded." Woodhead, Column 2, Lines 36-38. "An output signal from the oscillator 1 passes from port 4 to a frequency divider 5 and microprocessor 6, which **determine from the oscillator frequency** a measure of the

average dielectric constant of the medium over the length of the line.” Woodhead, Column 3, Lines 1-6. Frequency  $f$  equals the number of times a particular point on a wave (such as the crest) passes by a fixed point each second. In this sense, frequency is related to the wavelength or period of a particular wave whereas the phase shift of a wave is related to the change in positioning of the entire waveform. Accordingly, Woodhead does not teach or suggest the invention recited in the rejected claims.

For the reasons stated above, the Applicants respectfully request that the Examiner withdraw the rejection of claims 6, 9-12, 14 and 15 under 35 U.S.C. § 102.

### **Response to Rejections Under § 103**

The Examiner has rejected claims 2-5, and 13 under 35 U.S.C. § 103(a) as being unpatentable over Woodhead in view of article by Campbell et al. Applicants respectfully submit that the rejection is improper.

As discussed above, all of the rejected claims recite a **phase detector** for detecting the phase difference in order to determine the dielectric constant of a particular material. Woodhead does not teach or suggest utilizing a phase detector to analyze the phase difference of a signal transmitted through the transmission lines in order to measure the dielectric constant of a material. Rather, Woodhead only discloses analyzing the **frequency** of a signal that is transmitted through the transmission lines to determine the dielectric constant of a material. Likewise, the Campbell article does not teach or suggest the use of a phase detector for measuring the dielectric constant of a material. Therefore, the proposed combination fails to teach or suggest the claimed invention and is therefore an improper basis for an obviousness rejection.

The Applicants respectfully request that the Examiner withdraw the rejection of claims 2-5, and 13 under 35 U.S.C. § 103(a).

The Examiner has indicated that claim 7 is objected to as depending from a rejected base claim, but would be allowed if rewritten in independent form. Accordingly, Applicant has rewritten claim 7 in independent form to overcome this rejection.

Applicants have made a good-faith effort to resolve all matters with respect to the present application. Applicants believe that the claims, both those presenting originally claimed subject matter and those that have been amended, should now be in condition for allowance. Applicants respectfully request a favorable action on the merits. If there are any matters yet to be resolved in connection with this application, Applicants request the Examiner to telephone the undersigned attorney to expedite the handling of this matter.

Respectfully submitted,

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